REMARKS

Upon entry of this amendment, claims 1-14, 128 and 137 are pending in the instant application. Claims 15-127 and 129-136 have been cancelled herein, without prejudice or disclaimer. Applicants reserve the right to prosecute the cancelled subject matter, as well as the originally presented claims, in continuing applications. Claims 1-6, 12-14 and 128 have been amended herein, and dependent claim 137 has been added herein. Support for the claim amendments presented herein is found throughout the specification and in the claims as originally filed. For example, support for the regulatable, catalytically active polynucleotides recited by amended claim 1 is found at least at page 2, lines 7-14; at page 7, lines 10-13; at page 12, lines 14-20; at page 13, lines 7-25; at page 16, lines 7-23; at page 31, lines 1-11; in Example 3 at pages 45-57; and in Example 4 at pages 57-62. Support for the amendment to claim 6 is found at least in Example 3 at pages 45-57; and in Example 4 at pages 57-62. Support for the vectors recited by amended claim 128 is found at least at page 6, lines 26-27; at page 30, lines 25-28. Support for the polynucleotides recited by new dependent claim 137 is found at least at page 20, lines 23-25; at page 21, lines 7-9; at page 23, line 23 through page 24, line 4; and at page 46, lines 25-27. Accordingly, no new matter has been added by these amendments.

I. Priority

The Examiner has indicated that the as-filed specification improperly states that the instant application is a continuation-in-part of United States Provisional Application No. 60/212,097. The first paragraph ([0001]) of the instant specification has been amended herein to recite that the instant application "claims priority to United States Provisional Application Serial No. 60/212,097", in accordance with 35 U.S.C. § 119(e), 37 C.F.R. §1.78(a)(5) and MPEP 202.01. Accordingly, Applicants request that the Examiner withdraw this objection.

II. Oath/Declaration

The Examiner has asserted that the Declaration is defective because "non-initialed and/or non-dated alterations have been made to the oath or declaration." Applicants are in the process of obtaining a Supplemental Oath or Declaration in compliance with 37 C.F.R. § 1.67(a) and will submit a new oath or declaration as soon as it is available.

III. Election/Restrictions

The Examiner has acknowledged Applicants' election without traverse of the Group I claims (*i.e.*, claims 1-4 and 128) in Paper No. 21. Applicants note that claims 15-127 and 129-136, drawn to a nonelected invention, have been cancelled herein without prejudice or disclaimer. Applicants reserve the right to pursue the cancelled subject matter, as well as the original claims, in continuing applications.

IV. Claim Rejections Under 35 U.S.C. § 102

The Examiner has rejected claims 1-13 and 128 under 35 U.S.C. §102(b) as being anticipated by United States Patent No. 5,663,064 ("Burke"). In particular, the Examiner has asserted that Burke discloses "ribozymes having a double-stranded RNA and a single-stranded loop or single-stranded RNA-binding protein site incorporated into their structure, binding of ligands (*e.g.*, proteins) to these binding-sites may improve the activity of the ribozyme." (Office Action, page 3).

Applicants note independent claims 1 and 128 have been amended herein. As amended, independent claim 1 (and claims 2-13 which depend therefrom) recites regulatable, catalytically active polynucleotides having a catalytic domain and a regulatory domain, such that the catalytic activity of the catalytic domain is regulated by the interaction between a peptide effector and the regulatory domain. Amended claim 128 recites a vector that contains a regulatable, catalytically active polynucleotide having a catalytic domain and a regulatory domain, such that the catalytic activity of the catalytic domain is regulated by the interaction between a peptide effector and the regulatory domain.

Thus, the pending claims are directed to regulatable, catalytically active polynucleotides (RCANA) having two functional domains, *i.e.*, a catalytic domain and a regulatory domain, wherein the catalytic activity of the catalytic domain is regulated by an interaction between the regulatory domain and a peptide effector. As described throughout the as-filed specification, the RCANA of the claimed invention are "regulatable," because the catalytic activity of the polynucleotide is increased or decreased in the presence of its cognate peptide effector. (*See e.g.*, specification at page 13, lines 7-25; page 31, lines 2-11; Example 3 at pages 45-57; and in

Example 4 at pages 57-62). For example, the RCANA described in Example 3 were activated "thousands of fold" in the presence of their cognate peptide effectors.

Burke, however, fails to disclose or suggest catalytic polynucleotides in which the catalytic activity is regulated by an interaction between the polynucleotide and a peptide. The RNA molecules described by Burke, termed HpR17 ribozymes, include a hairpin ribozyme portion (Hp) and an R17 coat protein-binding sight (R17bs). At col. 3, lines 39-46, Burke states that the binding of protein ligands to the protein-binding sites "preferably does not significantly affect the catalytic activity of the ribozyme, and may improve the activity of the ribozyme." (Emphasis added). There is, however, no teaching or suggestion in the Burke reference that the disclosed HpR17 ribozymes are regulated by the presence or absence of the R17 coat protein.

As described by Burke, the inclusion of the R17 coat protein-binding site within the Hp ribozyme improved the cleavage rate of the Hp ribozyme, because "the increase in catalytic efficiency correlates with stabilization of the ribozyme tertiary structure." (*See* Burke, col. 3, lines 64-66). Thus, the R17 coat protein-binding site is used to stabilize the Burke polynucleotides. There is no teaching or suggestion of incorporating the R17bs to create polynucleotides having catalytic activity that is under the control of the protein binding site, such that the presence of the cognate peptide or protein regulates (*e.g.*, activates or de-activates) the catalytic activity. In fact, Burke explicitly teaches that the presence of the R17 coat protein produced "no significant differences" in the efficiency of RNA cleavage reaction catalyzed by the HpR17 ribozyme, and the ligation reaction catalyzed by the HpR17 ribozyme was "insensitive" to the presence of R17 coat protein. (*See* Example 6, col. 12, lines 22-27 and Figure 10).

Thus, the catalytic activity of the Burke RNA molecules is not regulated by the interaction between the R17 coat protein and the R17 binding site. Accordingly, this reference fails to disclose or suggest every element of the claimed RCANA polynucleotides, and Applicants request that the Examiner withdraw this rejection.

V. Claim Rejections Under 35 U.S.C. § 112, second paragraph

The Examiner has rejected claims 1-14 and 128 under 35 U.S.C. §112, second paragraph as being indefinite. In particular, the Examiner has asserted that there is insufficient antecedent basis for the limitation "the peptide" in line 2 of claim 1 (and its dependent claims, including

claims 2-14). With regard to claims 3-4, the Examiner has indicated that the limitation the "peptide" is unclear as to whether this term refers to the peptide recited in line 2 of claim 1 or a different peptide. With regard to claims 12-14, the Examiner has also objected to the limitation "the peptide". With regard to claim 128, the Examiner has asserted that the limitation "the peptide" in line 2 lacks sufficient antecedent basis. (Office Action, page 5).

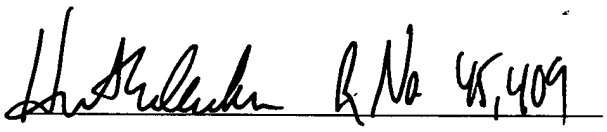
As discussed above, the pending claims have been amended herein. Applicants note that the term "polypeptide" in line 1 of amended claim 1 has been replaced with the term "peptide effector." Moreover, dependent claims 2-4 and 12-14 have been amended to recite "the peptide effector." Accordingly, Applicants believe there is sufficient antecedent basis for the term "peptide effector", as recited by amended claim 1 and its dependent claims (including claims 2-14). In addition, Applicants contend that, in light of the amendments to independent claim 1, the limitation "a peptide" recited by claims 3 and 4 clearly refers to the peptide effector of amended claim 1. Finally, Applicants note that claim 128 has been amended herein to replace the term "the polypeptide" with "a peptide effector."

In light of the claim amendments presented herein, Applicants contend that the amended claims are clear and definite. Accordingly, Applicants request that the Examiner withdraw this rejection.

CONCLUSION

On the basis of the foregoing amendments, Applicants respectfully submit that the pending claims are in condition for allowance. If there are any questions regarding these amendments and remarks, the Examiner is encouraged to contact the undersigned at the telephone number provided below.

Respectfully submitted,



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